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ABSTRACT

This paper presents data from an ongoing project in several teacher education classes that required students to use reflective analyses in evaluating the implications of knowledge and selecting practices for use in their own future classrooms. The methodology looked at changing one aspect of the learning process--the quality of the responses required of the learners to printed supplementary materials. The materials examined were developed to enhance learning through multiple exposures to new content. While traditional assignments on supplementary materials consisted of questions requiring mostly rote answers, the revised assignments consisted not only of knowledge and comprehension level questions, but also specific questions requiring choice and then a synthesis or evaluation of that choice. Data analysis indicated that students who were presented with study guide materials consisting of both traditional and revised activities were as likely to complete the latter, even though it required more work. Results of the study indicated that creating opportunities for informed decision making, selection of choices, and analysis of ideas presented, allowed preservice teachers to demonstrate higher levels of cognitive thought as well as to take on more challenging ideas. Sample study guides, exercises, and brain teasers are appended. (Contains 15 references.) (ND)

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ED 409 280

Increasing levels of cognitive interactions in preservice teachers using materials created to develop the knowledge base

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K. Newman

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Increasing levels of cognitive interactions in preservice teachers using materials created to develop the knowledge base

Educators are aware of a cognitive gulf between ourselves and parents, policy makers, and even educational administrators. We seek to build partnerships, yet lack a communicative framework for dialogue. More seriously, this gulf also exists between teacher educators and preservice teachers. This is critical because preservice teachers will be taking what they perceive to be our teaching practices into classrooms and training future generations for a global economy. For example, projects, papers and even conversations with future teachers often reveal knowledge that is fragmented, or worse based merely on rote memory without the benefit of critical analysis (Levine, 1996; Tharp & Gallimore, 1989). The result is often teachers who can pass written exams (e.g., NTE or Praxis), but lack the analytical and pedagogical skills of more experienced teachers. Moreover, our own teaching methods may inadvertently reinforce this problem through heavy use of the "one question-one answer" paradigm. Teacher education programs are being mandated to produce flexible, reflective and creative teachers (e.g. Carter & Larke, 1995; Darling-Hammond, 1996; Jones-Wilson, 1996); however, the reality is that many of our strategies used to assist preservice teachers in acquiring the content knowledge may actually work against us.

Even when personnel in teacher education programs reexamine and reformulate the content and strategies students still demonstrate deficiencies. We forget that learning is a transactional communicative experience--not only must something be taught, but it must be learned. The work of Holt-Reynolds (1995) illustrates this point. On one level her preservice teacher "got it", yet on a deeper level they didn't. They comprehended the discrete elements presented to them,

yet failed to grasp the ramifications of the whole. More disturbing, this failure to comprehend the entire picture is echoed in the studies of the effectiveness of "diversity" classes (e.g., Carter & Larke, 1995; Ladson-Billings, 1995) where despite passing the class, many preservice teachers did not change their essentially negative perceptions of diverse populations. Therefore, the question must be "What happened?"

Constructivist theory may provide a clue. This theory is based on the premise that all knowledge is constructed, either by the learner alone, or by the learner working with the facilitator (Spivey, 1997). Furthermore, current views that knowledge should be used as a guide(Donmoyer, 1996), not a mantra to constructing schema in education would indicate that these preservice teachers were given new knowledge, but were not assisted in analyzing how this knowledge would work in an educational setting. Consequently, I believe that teacher educators must examine the content of their teaching--not only for rigor, but also for opportunities to engage in "dialogues" with preservice teachers. These dialogues occur in the classroom, but also through interactions with the ideas presented. These outside of class dialogues are formed through the use of modified "guided notes", which form the basis for higher level cognitive processes on the part of preservice teachers. Therefore, I propose to present data from an ongoing project being used in several classes in the teacher education program that not only requires basic learning of the material, but requires students to use reflective analyses in evaluating the implications of the knowledge and selecting practices for use in their own future classrooms. Currently, preservice teachers are only required to "get the answer right", not think about it.

The theoretical framework is based upon the works of Vygotsky (1962), and Tharp and Gallimore (1989). Vygotsky (1962) examined the vast amount of

learning that takes place in social contexts, and maintained that true learning cannot take place in a social vacuum. This assertion is important because if we examine the way that most teachers are trained, it is in a format far removed from most social behaviors. Specifically, it is one-sided, and requires simply rote memorization. Tharp and Gallimore (1989) examined cross-cultural perspectives. Specifically they studied how culture shapes what is transmitted, and well as how it is transmitted. They wrote that despite all of the calls for educational, teacher, and certification reforms, most teachers still teach the way that they were taught. Therefore, if teacher educators want to change the quality of future teaching, we have to change our methods as well. If we want reflective, insightful teachers who will be able to meet the demands of the 21st century educational system (e.g., Alley & Jung, 1995), then we have to give them opportunities to develop those reflective and evaluative skills before they get to their methods courses .

My method looks at changing one aspect of the learning process -- the quality of responses required of the learners to printed supplementary materials. Using Bloom's Taxonomy as a guide, most printed materials for preservice teachers rely heavily upon building the knowledge and comprehension components in their students. For example students learn who Piaget is, his levels of cognitive thinking, and what is expected at each age level. Few learn how to apply it, or more importantly, how to change instruction to match the cognitive level of the students to promote positive self-esteem, diversity and inclusion of all students. Preservice teachers are expected to know the names and descriptions of different types of programs for gifted students, yet few are asked to evaluate those programs for effectiveness, or choose which of the many programs would most likely match their own developing teaching style. I discovered that students who were presented with study guide materials consisting of both traditional

activities and activities requiring a choice or selection by the learner were as likely to complete the latter--even though it required more work than to just pull it from the text or reading. Using the work of Craik (1973) in memory, I concluded that those activities that required not only multiple exposures and increased levels of analysis, but also reflected the personal **choice** of the learner would result in educational methods and materials that would be more likely to be remembered and possibly used in the real classroom setting.

The data comes from preservice teachers in our teacher education program in upper division classes. The materials examined are supplementary materials developed to enhance learning through multiple exposures to new content. Traditional supplementary materials consist of questions requiring mostly rote answers. The revised materials consist of not only knowledge and comprehension level questions, but also specific questions requiring choice and then a synthesis or evaluation of that choice. This allows students the opportunity to become more active learners as advocated by Cross and Steadman (1996). As can be seen by the samples attached that creating opportunities for informed decision making, selection of choices, and analysis of ideas presented, allows preservice teachers to demonstrate higher levels of cognitive thought as well as take on more challenging ideas.

If we are to change the type of education in the schools, we must change the education that teachers experience, especially in the teaching programs. While we may not be able to impact the size of preservice teacher classes, we can promote more of a "dialogue" of ideas by allowing preservice teachers to express and defend views, and make choices about techniques, methods and materials that they would wish to become more proficient in using. Teachers cannot be expected to teach critical thinking and analysis if they themselves have never experienced it. Teachers cannot teach learning for the sake of learning, if they

have never participated in it, nor can they teach informed decision-making if all through school the decisions were made for them. Personal choice and personal investment in learning are unexplored intrinsic motivators for preservice teachers that may lead to increased numbers of teachers teaching and modeling critical thinking, as well as building communicative bridges through the active exploration of ideas.

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ED 312 Study Guide
Chapter 12 -- Comprehension, Application & Analysis

1. Read the profiles of the 3 students on page 532. How are these students **different** from what society would expect a "gifted" student to be?

2. Summarize in **one phrase each** the definitions for giftedness proposed by the following people and/or agencies, then pick your favorite:

   a. Terman (1925)

   b. U.S. Dept of Ed. (1993)

   c. Renzulli (1978)

   d. Piirto (1994)

   e. What is your favorite theory of giftedness & why.

3. List the 5 requirements for assessment proposed by the U.S. Dept of Ed (1993). In your opinion, which ones are most likely already being done?

4. List & give a quick example of each of the characteristics of giftedness according to Gallagher & Gallagher(1994), & Piirto(1994).

5. Look at the brown shaded note on p 539 on symbol systems. List one symbol system that surprised you.

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6. Define **asynchronous development**. Now, how might it be a problem for a gifted child, his or her parents, teachers, and/or clinicians?

7. Creativity is another aspect of giftedness. List Guilford's (1987) and Torrance's (1993) dimensions. Which one appeals to you the most & why?

Guilford (1987)

Torrance (1993)

Preference & why:

8. Read the Profile & Perspectives on pg 542.

a. What surprised you?

b. on p. 546 how might some of those students **get turned off by the school?**

9. What is the prevalence of gifted nationally? What factors, which also affect the numbers of identified special education students, contribute to the range of giftedness across states?

10. List two historical theories of intelligence (and their creators). HINT: If you took ED 328, remember "The Mismeasure of Man"

11. Look at the questions (Table 12.2) teachers/clinicians may ask about a child? Which 5 could you see **yourself asking** in order to find "gifted students"?

a.

b.

c.

d.

e.

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ED 312 Study Guide
Chapter 12 -- Comprehension, Application & Analysis

1. Read the profiles of the 3 students on page 532. How are these students **different** from what society would expect a "gifted" student to be? Society would probably expect a gifted student to be a borderline genius. All are not gifted in the classroom, but excel in the arts.

2. Summarize in **one phrase each** the definitions for giftedness proposed by the following people and/or agencies, then pick your favorite:

   a. Terman (1925) defines the gifted as those who score in the top 2% on standardized tests of intelligence.

   b. U.S. Dept of Ed. (1993) Youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment.

   c. Renzulli (1978) Children who possess or have the capability of developing above-average general abilities, a high level of task commitment, and creativity and can apply them to any potentially valuable area of human performance.

   d. Piirto (1994) Those individuals who, by way of learning characteristics such as superior memory, observational powers, curiosity, creativity and the ability to learn school-related subject matters rapidly and accurately, with a minimum of drill, have a right to an education different and broader than the different types of giftedness.

   e. What is your favorite theory of giftedness & why.
   My favorite theory of giftedness is the one made by the U.S. Dept. of Ed. This is because the theory includes those students who show the potential for being gifted and is the most broad as far as the different types of giftedness.

3. List the 5 requirements for assessment proposed by the U.S. Dept of Ed (1993). In your opinion, which ones are most likely already being done?
   1. Seek no variety
   2. Use many assessment measures
   3. Is free of bias
   4. Is fluid
   5. Identifies potential
   + Assesses motivation

4. List & give a quick example of each of the characteristics of giftedness according to Gallagher & Gallagher(1994). & Piirto(1994).

1. The ability to rapidly acquire, retain, and use large amounts of information. Ex. learning multiplication tables in a short period of time.

2. The ability to relate one idea to another.
Ex. Being able to apply what you have learned to a new situation.
3. The ability to make sound judgments.
Ex. One who chooses to stay home to finish an assignment that is due the next day instead of going out.
4. The ability to perceive the operation of larger systems knowledge that may not be recognized by the ordinary citizen.
5. The ability to acquire and manipulate abstract symbol systems.
Ex. Be regarded as manipulate sheet of music notation.
6. The ability to solve problems by reframing the question and creating novel solutions. Ex.

5. Look at the brown shaded note on p 539 on symbol systems. List one symbol system that surprised you.

I was surprised to see that dance has a notation.

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6. Define **asynchronous development**. Now, how might it be a problem for a gifted child, his or her parents, teachers, and/or clinicians? Asynchronous development is something that most highly gifted children experience in which mental, physical, emotional, and social development occur at dramatically different rates. Since their cognitive and intellectual abilities develop far ahead of their physical development, the child may have a hard time relating to kids their age, teachers will need to adjust their style to accommodate the child, and the parents will need to learn how to guide their child's intellect as well as nurture their emotions.

7. Creativity is another aspect of giftedness. List Guilford's (1987) and Torrance's (1993) dimensions. Which one appeals to you the most & why?

Guilford (1987) 1) Fluency, 2) Flexibility, 3) novelty/originality 4) Elaboration, 5) synthesizing ability, 6) analyzing ability 7) ability to reorganize or redefine existing ideas, 8) Complexity.

Torrance (1993) 1) delight in deep thinking, 2) Tolerance of mistakes, 3) Love of one's work, 4) Clear purpose 5) Enjoyment in one's work, 6) Feeling comfortable as a minority of one, 7) being different 8) Not being overly rounded, 9) A sense of mission, 10) The courage to be creative

Preference & why: I prefer Guilford because his dimensions portray a more well rounded creative individual.

8. Read the Profile & Perspectives on pg 542.

a. What surprised you?
The statements were made by young children yes!

b. on p. 546 how might some of those students **get turned off by the school?**
The school system tended not to allow these students to express their talents because they did not comply with the normal atmosphere in the classroom

9. What is the prevalence of gifted nationally? What factors, which also affect the numbers of identified special education students, contribute to the range of giftedness across states?
Gifted and talented students comprise 5% of the school-age population.
Factors that may contribute to the range of giftedness across states are the guidelines by which state identifies gifted students, and the discrepancies between need and the level of service.

10. List two historical theories of intelligence (and their creators). HINT: If you took ED 328, remember "The Mismeasure of Man"
1. Paul Broca believed that intellectual superiority is determined by the size of ones head.
2. Sir. Francis Galton believed that human intelligence was fixed and immutable.

11. Look at the questions (Table 12.2) teachers/clinicians may ask about a child? Which 5 could you see **yourself asking** in order to find "gifted students"?
Does the child -
a. Show unusual ability in some academic area?
b. Have his/her own idea about how something should be done and stay with it?
c. Seem to pick up skills in the arts without instruction?
d. Get math problems correct but find it difficult to tell you how?
e. Invent new techniques? Experiment?

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Chapter 3 -- Comprehension and Application

1. Why are informal assessments so valuable to an effective teacher, and yet so hard for a new teacher to use?

2. Take two (2) of Oosterhof's examples of informal assessment listed on pg. 25 and briefly describe **how** you would use it in your teaching of your subject area.

a.

b.

3. Oosterhof believes that formal testing will more likely elicit **maximum performance**, while informal testing will more likely measure **typical performance**. Your students won't always follow Oosterhof. Therefore, first, define "elicit". Next, describe a situation where the reverse is true.

"elicit" means:

4. Look at Oosterhof's distinction between the terms **performance** and **capability.** How would you describe the difference between the two to a parent of a student?

5. What is an **idiosyncrasy**? Why is it important to be aware of it (them) in education?

6. Why is it important to document your observations and informal assessments? What are drawbacks to documentation in terms of teaching? Why must a teacher/clinician be aware of confidentiality?

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7. For the sections on **preliminary, diagnostic, formative,** and **summative** evaluations, list two points for each that really struck you (made you stop and think in surprise, agreement or even disagreement).

preliminary

a.

b.

diagnostic

a.

b.

formative

a.

b.

summative

a.

b.

Application exercise for Chapter 3

You will need 25 minutes, a cooperative instructor/clinician, one sheet of paper and a pen/pencil. This is worth .5 OP hour.**

Task: Find an instructor/teacher/clinician whose teaching or clinical work you respect (or fear). Sit in the class and keep a tally of how many informal assessments (probes for understanding) that person uses in 25 minutes. For further examination, see if you can chart how the questions are used--do unanswered questions lead to rephrasing, wait time, reteaching or something else. Next, chart the responses--sometimes even unorthodox methods can lead to "positive" results. Finally, describe the motivators.

General directions--be on time, be discreet, do not leave until you are either given permission to do so, or leave at a prearranged time, and finally use **no names**, or clues to identity. This is an educational exercise, not a witchhunt.

Question #1: How many probes were used, and how were they used?

Question #2: Be kind now, and remember for many of you, there are less than 2 years before your own lesson plans either fly or go flop. What were the responses to the probes? NOW: what would you do differently?

Question #3: What were the motivators and when were they applied?

****BE SURE TO ASK FIRST!!!!!!!!!! Just in case there are any masochists out there, ED 328 is out--you should be taking notes for class during class, but ED 312 is OK <u>only if you are not taking it this semester!!</u>**

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Chapter 3 -- Comprehension and Application

1. Why are informal assessments so valuable to an effective teacher, and yet so hard for a new teacher to use? After an instructor is familiar with the class, he is able to determine the nature of his class by recognizing questions, facial expression or boredom. A new teacher has to become familiar with the classroom personalities, strengths + weaknesses.

2. Take two (2) of Oosterhof's examples of informal assessment listed on pg. 25 and briefly describe **how** you would use it in your teaching of your subject area.

a. To determine why a student is constantly playing a rhythm wrong, have him count the beats aloud while clapping his hands.

b. "In musical terms, the whole note receives 4 beats - what is the difference between a whole note + a half note. If you get the right answer, you will receive a prize.

3. Oosterhof believes that formal testing will more likely elicit **maximum performance**, while informal testing will more likely measure **typical performance**. Your students won't always follow Oosterhof. Therefore, first, define "elicit". Next, describe a situation where the reverse is true.

"elicit" means: express, portray.

"Suzanne could perform very well if she took the time to practice. Her teacher said she is capable of doing a lot more but she doesn't discipline herself. OK

4. Look at Oosterhof's distinction between the terms **performance** and **capability.** How would you describe the difference between the two to a parent of a student? The student recently had a death in the family. He is not able to elicit maximum performance during formal testing. OK

5. What is an **idiosyncrasy**? Why is it important to be aware of it (them) in education? idiosyncrasy: imperfection; quirk. It is important to be aware of them because an instructor must be aware of what is going on in and outside the classroom.

6. Why is it important to document your observations and informal assessments? What are drawbacks to documentation in terms of teaching? Why must a teacher/clinician be aware of confidentiality? It is important because informal assesments happen fast + spontaneously. They may contain confidential information which is best left unrecorded. Each teacher can have a different interpretation of a students. yes. Why is confidentiality so important?

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7. For the sections on **preliminary, diagnostic, formative**, and **summative** evaluations, list two points for each that really struck you (made you stop and think in surprise, agreement or even disagreement).

preliminary

a. Prel. eval. rely on informal assessments because they provide the framework for the entire class.

b. I also agree that substitute teachers have a difficult time controlling the class because of prel. eval.

diagnostic

a. I agree that a student can be diagnosted in a formal or informal assessment.

b. Both formal - informal assessment are valuable for effective instruction.

formative

a. I love the idea of formative evaluation because the students get to interact with the teacher.

b. Teacher has to be careful when using formal evaluation because there are children who will not ask questions + do not know what is going on.

summative

a. Teachers need summative evaluation because they need to have the confidence in being able to wrap up the chapter.

b. Summative evaluation identify whether the instructor has taught the lesson, effectively.

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Application exercise for Chapter 3

You will need 25 minutes, a cooperative instructor/clinician, one sheet of paper and a pen/pencil. This is worth .5 OP hour.**

Task: Find an instructor/teacher/clinician whose teaching or clinical work you respect (or fear). Sit in the class and keep a tally of how many informal assessments (probes for understanding) that person uses in 25 minutes. For further examination, see if you can chart how the questions are used--do unanswered questions lead to rephrasing, wait time, reteaching or something else. Next, chart the responses--sometimes even unorthodox methods can lead to "positive" results. Finally, describe the motivators.

General directions--be on time, be discreet, do not leave until you are either given permission to do so, or leave at a prearranged time, and finally use **no names**, or clues to identity. This is an educational exercise, not a witchhunt.

Question #1: How many probes were used, and how were they used?

No probes were used unless a student stopped the instructor and asked her a question. She would answer the question, pause for any other comments and continue on with the lesson.

Question #2: Be kind now, and remember for many of you, there are less than 2 years before your own lesson plans either fly or go flop. What were the responses to the probes? NOW: what would you do differently?

First of all, I would speak audibly so I can be heard. "Are there any questions?" Walk around the room to check on the computer assignment and critique whether it is good or needs improvement.

Question #3: What were the motivators and when were they applied?

I don't know what the motivators were. Therefore I don't if they were applied or not.

ok fair enough

****BE SURE TO ASK FIRST!!!!!!!!!! Just in case there are any masochists out there, ED 328 is out--you should be taking notes for class during class, but ED 312 is OK only if you are not taking it this semester!!**

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Statistical Brain Teasers #1

A student comes to you with the following information and scores in her cumulative record. All scores were obtained at the end of the school year.

Kdg.	reading readiness score	z = +2.00
	math readiness score	t = 75
	language arts	70th percentile
	attendance	missed 26 days this year
1st grade	reading	t = 62
	math	t = 72
	language arts	z = +.89
	social studies	50th percentile
	attendance	missed 35 days this year
2nd grade	reading	22nd percentile
	math	z = -1.27
	science	1st percentile
	language arts	t = 37
	attendance	missed 56 days due to hospitalization (heart surgery) allowed to advance because of visiting teacher
3rd grade	reading	grade equiv. = 1.9
	math	t = 27
	social studies	1st percentile
	science	1st percentile
	language arts	grade equiv = 1.5
	recommendations	evaluation for special educ.

You are a 4th grade teacher who may get this student in class. What happened to this student? Where did the breakdown occur? Why might special education *not* be the best option? What would you suggest in its place?

Statistical Brain Teasers #2
Comprehension and Application to be completed at the end of the statistical section

1. You have a student that has scored at the 57th percentile for the district in reading vocabulary, reading comprehension, and math; however, that same student scored at the 8th percentile in social studies. What general conclusions do you make about that student? What would your plan as an **educator** be?

2. You take a job teaching in West Virginia. Your students take a standardized test at the end of the year. The average score of your class is the 5th percentile. When you state that the test may be biased, you are told that the test developers included **125** West Virginia students representing grades 1 - 12 in their norming sample of **7500** students. How do you respond?

3. On a standardized test, a student in your class scores at the 8th stanine for the grade in your school, but the 2nd stanine for the district, and the 4th stanine in comparison to the national norm. What do you conclude about the district norms with respect to the school and the national ones?

4. You are a speech clinician. You give a test of **articulation** to a student. The student scores in the borderline range for needing speech therapy, but when compared to previous scores for other students (same age) from that community, he scores better than most. What do you conclude about the speech patterns of the community with respect to standard English? What are your most ethical options?

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